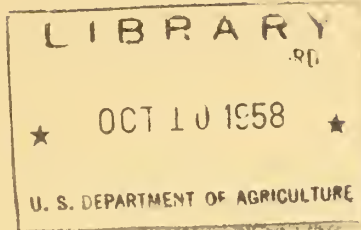


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FEDERAL-GRANT RESEARCH  
at the  
STATE AGRICULTURAL  
EXPERIMENT STATIONS

8, pt 13, Sect 12

Projects on

HOUSING

Part 13, Section b

Agricultural Research Service  
UNITED STATES DEPARTMENT OF AGRICULTURE

Compiled August 1958 by

The State Experiment Stations Division, Agricultural Research Service, U. S. Department of Agriculture, Washington 25, D.C., for use of workers in agricultural research in the subject-matter areas presented. For information on specific research projects write to the Director of the Station where the research is being conducted.

Issued October 1958

FEDERAL-GRANT RESEARCH  
at the  
STATE AGRICULTURAL EXPERIMENT STATIONS

Projects on  
HOME ECONOMICS

Section b: Housing

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## INTRODUCTION

This compilation is one of a series providing information on State agricultural experiment station research supported by Federal-grant funds appropriated annually by Congress under authorization of the Hatch Act of 1887, as amended and approved August 11, 1955, and Section 204(b) of the Agricultural Marketing Act of 1946. It is prepared for use by research workers in the subject-matter areas presented. Only that part of each State's research program supported by Federal-grant moneys is included.

In addition to the Federal-grant moneys, the State experiment stations receive some Federal support through cooperative agreements or contracts with the U. S. Department of Agriculture. Information on such research, along with other departmental research, is available in the Central Project Office, Agricultural Research Service.

A substantial part of each State agricultural experiment station's research is supported with moneys appropriated by the respective State or Territorial Legislatures and through other forms of private and public financing. Information on current agricultural research at the stations which is not financed under the Federal-grant program or through USDA cooperation can be obtained from experiment station directors.

The information given in the series of Federal-grant compilations includes the title and objectives of each Federal-grant project pertaining to the subject given on the cover. The identification of each project gives the department(s) conducting the research, the station number of the project, and the number of the regional project if it is a contributing project.

Relevant regional projects, if any, appear at the end of the compilation. States having projects contributing to regional projects are indicated. The Roman numeral refers to the location in the summary of the contributing project title and objectives. The States are grouped into four major regions. These are designated NC-North Central, NE-Northeastern, S-Southern, and W-Western. The capital letter "M" following the letters for the region indicates regional marketing projects.





## SPACE REQUIREMENTS FOR HOUSEHOLD AND FAMILY ACTIVITIES AND STORAGE

- Ala.      Simplification of Construction and Erection Practices for Exterior and Interior Walls, Space Requirements for Clothing, and Design of Storage Units for Southern Farm Homes. To (1) establish designs and construction methods for prefabricated exterior and interior walls; (2) develop pre-cutting procedures for construction elements of rural homes with particular emphasis on simplicity of design and ease of construction; (3) test and evaluate construction materials and methods suitable for exterior and interior walls in rural homes; and (4) a. determine whether free standing storage units as designed provide maximum interchangeability, b. investigate specific requirements of size, shape, and dimensions that contribute to their proper functioning; c. establish by laboratory experimentation standards and designs for the construction of movable free standing storage units on basis of number and kinds of items owned by rural families as determined in Housing Survey S-8; and d. evaluate functional layout and esthetic appearance of storage units designed on the extent to which the following desirable features are considered--1. ease and economy of construction, 2. suitability for repetitive construction, and 3. acceptability by rural group for which intended.  
Home Econ., Agr. Engin. 532 (S-8)
- Ala.      Body and Activity Measurements as a Basis for Designing Space, Facilities, and Equipment for the Home. To learn space required by homemakers around major items of household equipment and furnishings for activities related to their care and use.  
Home Econ. 576 (S-8)
- Ariz.      Space Requirements for Activities and Storage for the Care of Infants and Young Children. To determine amount of space needed to care for infants and young children and to store materials and equipment used for this activity.  
Home Econ. 323 (W-8)
- Ariz.      Desirable and Acceptable Lavatory Heights for Adults of Various Heights. To determine (1) range of acceptable lavatory heights for men and women of various heights; (2) desirable heights for adults of both sexes within their acceptable range; (3) desirable heights for lavatory installations for standard architectural practice; and (4) to develop a guide for lavatory installations for a specific group.  
Home Econ. 451 (W-8)

Ark.        Space Requirements for Typical Activities Requiring Sitting Using Unupholstered Straight Chairs Selected in Relation to Body Measurements of Adults. To determine (1) space needs for adults of various body types seated in unupholstered straight chairs while engaged in various activities in living rooms; (2) minimum and maximum comfortable distances between chairs when used concurrently by two or more adults; and (3) desired height of table surfaces for eating, writing and game playing when seated in chairs of chosen seat height.  
Home Econ. 377 (S-8)

Colo.       The Improvement of Rural Housing in Colorado: A Study to Determine Functional Requirements. To (1) collect, analyze, and apply basic information on rural families and their environmental conditions that is required in developing house plans suited to various areas of western states; (2) establish basic planning data--space, equipment, and utilities--for dressing areas and related storage spaces in rural homes of West; and (3) develop and appraise house plans for selected sets of conditions that use to fullest extent the above information to make plans available for public use and carry on further research.  
Home Econ. 206 (W-8)

Ga.        Requirements and Designs for Laundry Area for Southern Rural Homes. To (1) determine space needs for laundry activities in Southern rural homes; (2) determine practical, economical and efficient arrangements of equipment and facilities for laundry areas; (3) study selected practices which may contribute to effective use of laundry areas; and (4) design and develop plans for minimum and desirable laundry areas in relation to other work areas in Southern rural homes.  
Home Econ., Agr. Engin. 328-1 and 3 (S-8)

Ga.        Design and Construction of Work and Storage Spaces for Farm Homes. To (1) establish construction designs for built-in and prefabricated equipment based on needs for more efficient use of space, to aid in smoother functioning of household activities and greater enjoyment in family living; (2) develop simple, economical construction designs for appropriate materials and methods to meet service needs for various facilities; (3) construct and evaluate operational characters of facilities as to serviceability, ease of maintenance, adequacy of space, and appropriateness of design; and (4) apply findings in improvement of construction methods and designs.  
Home Econ. 328-2 (S-8)



- Ga.            A Study of Space and Facility Requirements for Home Sewing Centers in Southern Rural Homes. To determine (1) space requirements for home sewing activities in Southern rural homes; (2) facilities needed for home sewing activities; and (3) to develop arrangements for home sewing activity areas.  
Home Econ. 328-4 (S-8)
- Ill.           Studies to Determine, Interpret and Present Farmhouse Requirements. To (1) determine requirements of farmhouses in terms of space, arrangement, environment, design of equipment, and functional features to provide satisfactory accommodations; (2) establish precise needs for space for household activities, storage, and arrangement of equipment and furnishings, and test effect of these phases of design on the worker in terms of time, motion, fatigue, and other measurable factors; and (3) interpret and apply results of field studies, case studies, laboratory research, and technological developments for developing plans and planning aids to new house construction and remodeling of old houses.  
Home Econ., Agr. Engin. 10-377 (NC-9)
- Ill.           Studies to Determine Space and Arrangement Standards for Various Areas of the House. To determine (1) requirements for space needs and arrangements of up-to-date kitchens to give maximum degree of convenience and comfort for able-bodied and physically handicapped homemakers; and (2) interpret results of study and apply to functional design of kitchens and kitchen storage units suitable for above homemakers.  
Home Econ. 60-377 (NC-9)
- Mont.          Personal Hygiene Areas in the Rural Home. To (1) determine factors affecting hygiene area needs in rural homes; (2) develop efficient arrangements for storage of equipment and supplies needed; (3) develop standardized sections of bathroom walls and storage areas to fit into bathrooms of various sizes and shapes to reduce building costs; and (4) prepare floor plans in number and variety needed in planning homes for western region.  
Home Econ. 889 (W-8)
- Nebr.          The Space and Equipment Requirements for Activities of Teen-Age Children in Nebraska Rural Families. To (1) determine recreational activities carried on in home by families with teenagers; (2) evaluate present space and equipment available for carrying on these activities; (3) develop space standards for certain activities commonly enjoyed by farm families; and (4) plan arrangements of equipment, storage space, and free floor areas for leisure activities.  
Home Econ. 583 (NC-9)

N. Y.                    Basic Space Requirements in Northeastern Farm  
(Cornell) Houses as Influenced by Activity Patterns. To establish adequate farm house planning guides for Northeastern region by (1) integrating research findings of space needs and facilities required for various activities carried on in the home; and (2) determining space needs of activities carried on simultaneously in same general area and in different areas of the home.

Housing and Design 113 (NE-20)

N. C.                    Space and Storage Requirements for Home Activities  
of Children. To (1) determine activities of children of different ages in Southern rural families; (2) determine usual location in which these activities are performed and factors affecting acceptability and availability of the location; (3) develop activity centers satisfactory to selected families in amount of space and arrangements of equipment for child's playing, sleeping, eating, dressing, studying, etc.; and (4) design one or more bedrooms which meet the needs of a child or children at all ages from infancy through adolescence.

Home Econ. 76 (S-8)

Pa.                    Basic Space Requirements in Pennsylvania Farm Houses  
as Influenced by Activity Patterns. To establish adequate farm house planning guides for Pennsylvania by (1) integrating research findings of space needs and facilities needed for various activities carried on in the home; and (2) learning optimum range of space needs for activities carried on simultaneously in same general area and in different areas of the home.

Home Mgt. and Housing 1112 (NE-20)

Wash.                    The Functional Requirements of the Farm Home Workroom.  
To determine (1) space requirements for activities assigned to workroom; (2) storage needs of associated supplies; (3) develop workroom arrangements incorporating findings of Objectives 1 and 2; (4) translate findings into graphic standards for use of architects and builders.

Home Econ. 826 (W-8)

Wash.                    Body and Activity Measurements for Designing Space,  
Facilities and Equipment in the Home. To (1) obtain human body measurements affecting space used for household activities and design of equipment and furniture; (2) determine space required to perform common household activities related to use of major kinds of equipment and furniture; (3) develop formulas for calculating activity-space needs on basis of critical body measurements; and (4) translate body and activity measurement into design data.

Home Econ. 1350 (W-8)

DESIGN AND CONSTRUCTION

Ala.            Attic Space Ventilation and Insulation. To (1) determine effects of gable roof attic space ventilation on ceiling panel temperatures; (2) compare adequate attic space ventilation methods with ceiling insulation methods for summer control of the ceiling panel temperatures under a gable roof; and (3) determine best method of ventilating a gable roof attic space for summer ceiling temperature control.

Agr. Engin. 558 (S-8)

Miss.           Effects of Roof Overhang on Protection from Rain of Outside Walls and Windows and on Outside and Inside Wall Surface Temperatures Using Different Building Materials. To determine (1) effect of width of roof overhang on outside and inside wall surface and inside air temperature; (2) advisability of using different widths of roof overhang because of different construction materials or different colors of outside wall; (3) inside temperatures of houses constructed with different types of masonry outside walls; (4) heat losses through walls of houses differing in outer wall color and material; (5) how heat absorbed in walls during day affects inside night temperature during hot season; (6) whether walls on sunny side of house can absorb sufficient heat from winter sun's rays to effect inside warming; and (7) effect of width of roof overhang on protection of walls and windows from rain.

Agr. Engin. RRFB-1 (S-8)

Tex.            Resolving of Space Standards Developed Through Research Into Plans and General Specifications for Southern Rural Homes. To prepare study-plans and general specifications for houses in the Southern Region incorporating the varied functional requirements as established from the research conducted by the cooperating states.

Agr. Engin., Home Econ. 1183 (S-8)

(For additional information on this category see Part 3, Section c, Farm Structures and Materials.)



## MATERIALS

Tex.        Desirability of Materials and Methods of Installation for Floor Coverings, Drainboard Surfaces, Floor and Wall Finishes, and Wall Coverings. To (1) determine by laboratory tests and actual installation in farm homes the useful life of covering, surfacing and finishing materials for use in farm home construction; (2) determine proper application for covering, surfacing and finishing materials used in the homes to include bindings, fastenings, and adhesives; (3) determine relative desirability of various materials for specific applications; and (4) correlate useful life and cost with desirability of various covering, surfacing and finishing materials for various types of uses.

Agr. Engin., Home Econ. 943 (S-8)

(For additional information on this category see Part 3, Section c, Farm Structures and Materials; and Part 11, Forestry)

## UTILITIES

Mo.        Farm Water Supply. To (1) design and test effectiveness of at least two different experimental vertical slow-sand filters under different pond water conditions; and (2) develop a practical technique for filtering pond water and set forth specifications for such a filtering system, which can consistently be expected to supply water suitable for domestic purposes in farm homes.

Agr. Engin. 155 (NC-9)

N. Dak.    An Electrical Househeating System vs. a Hot Air System Fired with Oil, Bottle Gas, or Natural Gas. To secure (1) operating and maintenance cost information on an electrical heating system as compared to hot air systems fired with oil, bottle gas, or natural gas; and (2) information on temperature variation, dust accumulation, and humidity of the two systems.

Agr. Engin. 4-4 (NC-9)

PHYSICAL ENVIRONMENT

Ala.            Thermal and Associated Conditions Related to the Operation and Use of Household Appliances. To (1) develop methods of measuring quantitatively thermal and related conditions caused by operation and use of household appliances during the summer; (2) use methods developed to investigate such effects of operation and use of appliances which may influence human comfort in summer; and (3) investigate readily obtainable means of reducing thermal and related discomforts caused by operation and use of household appliances.

Home Econ. 559.

Calif.        Micro-Climatic Influences on House Orientation and Design and on the Related Problems of Landscape and Interior Design. To (1) develop guides determined by micro-climatic and other environmental conditions for designing economical and livable rural homes; and (2) determine how environmental conditions can be modified to improve living comfort.

Home Econ. 1536 (W-8)

Mich.        Control of High Moisture Conditions in Houses. To (1) investigate high moisture conditions in houses and determine more specifically the problems, related factors, and minimum-maximum allowable ranges for relative humidities during various seasons; (2) determine economical and practical ways of reducing moisture content of interior air during various seasons; (3) develop a wall system and construction technique for wall units to eliminate exterior paint failures and condensation in the wall due to moisture problems; and (4) study in detail the effect of recirculating heating systems on moisture control and determine the value and justification of mixing a portion of outside fresh air into forced warm air heating systems.

Agr. Engin. 840 (NC-9)

(For additional information on this category see  
Part 15, Meteorology)

## PHYSIOLOGICAL RESPONSES TO HOUSEHOLD ACTIVITIES AND ENVIRONMENT

Ohio

Physiological Responses of Women at Work in the Home: Relationship to Methods of Work and to Design of Work Areas and Labor-Saving Appliances. To (1) determine energy requirements of women in performance of household tasks; (2) ascertain methods of work needing a minimum of effort and time; (3) determine relationship between energy requirements for women and space arrangements of work areas in home; (4) use energy needs as one of bases in planning activity space areas by architects and home planners; (5) determine relationships of energy needs to design of various labor saving appliances in home; and (6) translate findings for use of appliance designers as means for improved designs.

Home Econ. 80-3 (NC-9)

## SOCIAL AND ECONOMIC FACTORS

Iowa

Economic and Social Factors Related to Characteristics of Farm Dwellings in the North Central Region. To determine degree and nature of relationships between each of several socio-economic factors and: a. each of several physical characteristics of farm dwellings; b. composite of several physical characteristics of farm dwellings; and c. changes between 1940-1950 in prevalence of selected physical characteristics of farm dwellings, each for the region as a whole and for areas relatively homogeneous in point being studied.

Home Econ., Agr. Econ., Statis. 933 (NC-9)

Kans.

Farm Family Living Patterns, Activities and Preferences Used as a Basis for Functional Designing of Farm Houses. Housing Requirements of the Aged Rural Population in Kansas. To (1) secure information on patterns of family living as shown by activities of family members; (2) study variation in family activities and requirements as affected by stage in family life cycle, and, to a certain extent, by type of farming and income; (3) determine family preferences for location of activities; (4) determine equipment and materials necessary to perform the activities; and (5) study space needed for performing the activities, and storing the equipment used.

Home Econ. 288 (NC-9)



Mich. Farmhouse Safety. To (1) learn nature and cause of a representative sample of accidental stairway falls; (2) determine physical factors of stairways that contribute to making them hazardous; (3) evaluate stairways in laboratory from standpoint of design and the way people habitually walk up and down them; (4) determine energy requirements of walking up and down different types of stairs; and (5) formulate design specifications for safe stairways for homes.  
Agr. Engin. 454 (NC-9)

N. Y. Housing Needs of the Aged in Urban and Rural Areas.  
(Cornell) To develop some house planning and design guides to satisfy physical and emotional needs and desires of elderly persons.  
Housing and Design 203 Coop. USDC-Bur. of the Census, and Housing and Home Finance Agency

Vt. The Economic Status of Vermont's Aged Farmers and Their Wives or Widows. To determine in what conditions Vermont farmers and their wives or widows are living--with regard to amount and source of income, employment, place of residence, domicile status and comfort and convenience of housing.  
Home Econ. 63

Wis. Effect of Income, Tenancy, Family Composition, and Other Factors on Farm Home Requirements.--a. Housing the Aged Rural Population in the North Central Region.  
To (1) find housing needs peculiar to rural aged persons; (2) discover characteristics and living patterns of rural aged of probable significance in learning housing needs, including retirement patterns, income sources and family arrangements about income, use of time as related to housing needs, and problems of housing the aged; (3) determine relation between characteristics and living patterns of rural aged and such factors as income level, degree of urbanization, etc.; and (4) suggest specific standards for housing rural farm older population and methods by which these standards may be met by dwelling units.  
Home Econ. 408-a (NC-9)

REGIONAL PROJECTS

NC-9

Farmhouse Requirements and Their Application in the Improvement of Farm Housing. To (1) establish farmhouse requirements of space, arrangement, utilities, equipment, surface materials and finishes, and other facilities needed by farm families, for safety, health, comfort, convenience, and economy; (2) study the influence of selected geographical, economic, and social factors upon housing needs of farm families as a basis for adapting house plans and remodeling procedures to serve the interests of various groups; and (3) develop basic plans for new farmhouses and determine fundamental procedures for farmhouse remodeling that have qualities of adaptability and flexibility to meet various needs.

Contributing projects: Ill. I (2 projects), Iowa VII, Kans. VII, Mich. V and VII, Mo. IV, Nebr. I, N. Dak. IV, Ohio VI, Wis. VII, and ARS

NE-20

Basic Space Requirements for Northeastern Farm Houses as Influenced by Household Activity Patterns. To establish adequate farm house planning guides for the Northeastern region (1) by integrating research findings of space needs and facilities required for various activities carried on in the farm home, and (2) by determining the effect on space needs and facilities of performing several of the individual activities in the same general area.

Contributing projects: N.Y. (Cornell) I, Pa. I, and ARS

S-8

Functional Requirements and Plans for Southern Rural Homes. To (1) develop minimum and desirable recommendations for family activity centers, efficient arrangements of equipment and activity centers, functional requirements and designs for household facilities and equipment, and test the multiple use of rooms and areas and determine the need for, and means of accomplishing flexibility in space arrangements and sizes; (2) determine more efficient utilization of native and other materials and develop appropriate structural methods for low-cost maintenance and construction of new farm homes and remodeling of existing farm homes; and (3) develop new designs and a series of remodeling designs to conform to the requirements and findings established in (1) and (2) and previous studies.

Contributing projects: Ala. I (2 projects) and II, Ark. I, Ga. I (3 projects), Miss. II, N.C. I, Tex. II and III, and ARS

W-8

Improvement of Rural Housing in the Western Region. To (1) determine the dimensions of space needed to (a) carry on household activities, (b) store family possessions conveniently, and (c) arrange equipment efficiently, for each of the various parts of the farm house; (2) develop a set of recommendations for the design of certain features of farmhouses, based on an examination of available environmental data for this region and knowledge of human needs for comfort and health; and (3) use the basic planning data developed in (1) and (2) in compiling lists of unit space requirements and desirable features for homes, and in the preparation and evaluation of farmhouse plans.

Contributing projects: Ariz. I (2 projects),  
Calif. V, Colo. I, Mont. I, Wash. I (2 projects)  
and ARS



LIST OF COMPILATIONS OF FEDERAL-GRANT RESEARCH PROJECTS  
AT STATE AGRICULTURAL EXPERIMENT STATIONS

ARS-23-8:		
Part :	Subject-Matter Area	Title of Section
Numbers :		
1	Agricultural Chemistry	Agricultural Chemistry
2	Agricultural Economics	a. Prices, Incomes, & General Studies of Com- modities & Industries b. Farm Management c. Land Economics d. Farm Finance & Taxation
3	Agricultural Engineering	a. Land & Water Use & Develop- ment b. Power Machinery & Equipment c. Farm Structures & Materials
4	Animal Husbandry	a. Beef Cattle b. Sheep & Goats c. Swine
5	Dairy Husbandry	Dairy Cattle
6	Dairy Technology	Dairy Technology
7	Entomology & Economic Zoology	a. Field Crop Insects b. Fruit, Nut & Vegetable Insects c. Miscellaneous Insects & Economic Zoology d. Insecticides
8	Field Crops	a. Cereal Crops b. Oil, Fiber, Tobacco & Sugar Crops
9	Food Science & Technology	a. Food Chemistry, Micro- biology, Sanitation & Public Health b. Food Engineering, Processing, Product and Process Develop- ment, Utilization and Waste Disposal c. Food Quality & Standards, Acceptance, Preference, & Marketing
10	Forage Crops, Pastures & Ranges	Forage Crops, Pastures & Ranges
11	Forestry	Forestry



ARS-23-8:		
Part :	Subject-Matter Area	Title of Section
Numbers :		
12	Fruits & Nuts	Fruits & Nuts
13	Home Economics	a. Human Nutrition b. Housing c. Clothing & Textiles d. Foods-Consumer Quality & Utilization e. Household Economics & Management
14	Economics of Marketing	a. Field Crops b. Fruits & Vegetables c. Livestock, Meats & Wool d. Dairy Products e. Poultry & Poultry Products f. Forest Products & Ornamental & Drug Plants g. Cross-Commodity & Functional Studies
15	Meteorology	Meteorology
16	Ornamental & Drug Plants	Ornamental & Drug Plants
17	Plant Pathology & Bacteriology	a. Plant Pathology, Botany, & Diseases of Miscellaneous Crops b. Diseases of Field Crops c. Diseases of Fruit Crops d. Diseases of Vegetable Crops
18	Plant Physiology & Nutrition	Plant Physiology & Nutrition
19	Poultry Industry	Poultry Industry
20	Rural Sociology	Rural Life Studies
21	Soils	a. Soil Chemistry & Microbiology b. Soil Fertility, Management & Soil-Plant Relationships c. Soil Physical Properties, Conservation & Classification
22	Vegetables	a. Vegetable Crops b. Potatoes
23	Veterinary Science	Veterinary Science
24	Weeds	Weed Control



